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New Hampshire ARCHITECT

Official Publication-N.H. Chapter A.I.A.



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OUR COVER

Shows skiers lined up in front of the Ski Lodge at Mount Sunapee, designed by Koehler and Isaac, A. I. A. of Manchester.

The building was designed for use of skiers and for administration of the general park area which is operated by the Department of Recreation of the State of New Hampshire. First floor contains facilities for dining and lounging—storage space and office.

Basement or ground level contains toilets, ski repair shop, waxing room, first aid room, boiler room, etc.

Perhaps the outstanding feature of the building is the triangular window in the lounge which affords complete vision of the ski tow to the top of the mountain as well as a view of the ski slopes. Large glass area in the lounge and dining area affords a view of the children's ski slope to the south. This window also breaks into the ski room below.

Open fireplace joins the lounge and lounge-dining area.

Development of the whole area was under the supervision of the New Hampshire State Highway Department. Chair lift ski tow designed and manufactured by the Roebeling Company. Hutchinson Building Company was general contractor, Plumbing and Heating by M. W. Morgan, Electrical work, Seaman's Electric, all of Concord.

Other views of this project are shown on page 7.

TABLE OF CONTENTS

The President's Message	4
Architectopics	4
An Argument for a More Equitable Bidding Procedure	5
Moultonboro Grade School	8
New Universal "Select-a-Range"	10
Snow Melting	12
Correction of February Issue	16

THE PRESIDENT SPEAKS

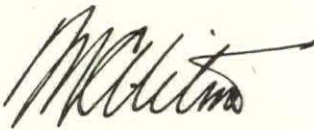
The Architect and high building costs are too many times referred to as synonymous—we are sometimes plagued by the Press, Radio, Taxpayers' Associations, and particularly those who have little, if any, experience in building or with Architectural and Engineering services. These, all with one accord, on too many occasions intimate to an ignorant and gullible public that Architects tend to increase the cost of their projects by selecting unnecessary luxury items and by endeavoring to increase their commission or both.

Those familiar with the building industry know that such intimations are both false and unwarranted.

Architects pay a high price for their experience and training, which requires eternal vigilance to guarantee wise selections of methods of construction, and of materials for their clients' use, always seeking the better way of meeting their projects' needs in stability, usefulness, as well as attractiveness.

The truth, as expressed by John Ruskin, still maintains, "All works of quality must bear a price in proportion to the skill, time, expense, and risk attending their invention and manufacture.

Those things called expensive are, when justly estimated, the cheapest. A composition for cheapness and not for excellence of workmanship is the most frequent and certain cause of rapid decay and entire destruction of arts and manufacturers."



McClarty Heads Plumbers

The Manchester Master Plumbers Association held their annual meeting last month at the Rice-Varick Hotel, Manchester, electing Donald H. McClarty as president of the association.

Other officers elected were Chester Magnuson, vice-president; J. Vincent Moran, secretary; Leon Goulet, treasurer; and James Johnson, R. C. Peabody, and Elroy N. Ekdahl, executive board members.

ARCHITEXTOPICS

By Eugene F. Magenau

Are architects human beings? Once while something happens to make me think this question can be answered in the affirmative. A recent long week end spent at the Inn over Inn was lifted way above the commonplace by several visits and luncheons with and Margaret Hunter. We not only had talking shop but were taken on an inspection tour of several of their interesting modern houses under construction.

We also visited one house that had been completed and occupied. Here a small daughter was running around barefooted on the radiantly heated floor of flagstone and asphalt tile. The walls of the living room were all glass and the roof was flat. These so-called "radiant" features are perfectly practicable in this climate, as most architects and a very few of the people know. Doubting Thomases should take a trip to Hanover, where the Hunters have combined these and other elements in quite a number of very modern houses—and handsome ones too.

There being a high concentration of architects in Hanover, I called on the others and found all but one in their offices. Arch Hunter was busy with a bill-collector or tax-collector or somebody (it might have been a clerk even!) so partner Bill Ingram chatted cordially and showed me some of their work in progress. A brief but enjoyable visit with Frank Marshall ended my "invasion" because Al Granger was out.

We enjoyed an especially pleasant hour of cocktails at the home of Prof. Hugh Morrison. While the wives talked "League of Women Voters," and men, the men discussed architecture, women, schools, and the forthcoming competition for the Highway Department office building, among other things. Hugh is on the Hanover School Board so he is experienced in still another relationship with architects. Besides architecture—besides teaching, he has authored several books, designed and built his home, and lectured. Most of us well remember his talk on modern architecture to us several years ago when we were still the "New Hampshire Society of Architects."

(Continued on page 9)

n Argument for a more Equitable Bidding Procedure

by *Eric T. Huddleston*

Architects, as well as Contractors, find themselves confronted with a situation that calls for careful and economical planning and construction to meet the limited budgets for both private and public building construction and it is with that in mind that I offer some comments based on past and present experience that may be suggestive of an approach by the architectural profession in rendering a more economical and constructive service to its clients.

We are rapidly, if not completely, passing from a sellers to a buyers market and Cost-plus is giving way to Firm-Bid form of building contracts. Competition for jobs is becoming more lively among contractors and their dealings with the attendant inducements for shopping and chiseling of bids. This practice bids to increase as the number of projects decrease and we find ourselves again being outmaneuvered by contractors to provide practical legal procedures that will insure fair and equitable bidding opportunities.

The use of the standard A. I. A. form of proposal is no guarantee that the lowest qualified bidder gets the award of the contract. The bidder may be qualified by reason of his known ability to do good construction work and his financial ability to procure a performance bond but there is nothing in the proposal form that tells how he arrived at his total contract price. Remembering that approximately fifty percent of the value of a project is handled through subcontractors whose bids to general contractors are freely offered and/or solicited without any firm control as to time of submission or standard of qualification to perform the work upon, we find the general contractor being placed in the position of a broker seeking the best possible prices from a large number of sources without his own organization to secure the award of the contract for himself.

Some contractors like the brokerage game and resent any curtailment of their operations implying that the architect himself usurps these same privileges when he sets up controls, ignoring the fact that he is dependent on those

same controls for his own protection against unfair bidding among his own competitors. This is not an indictment against even those few contractors who oppose any controls over sub-bidding but is a charge against architects in general who thoughtlessly and carelessly write into their general conditions a bidding procedure that practically forces the general contractor into the brokerage business to the disadvantage of themselves, their subs, and the client who pays the bill.

As most of the architects now practicing in New Hampshire know, a bidding procedure was developed in 1932 under the title of "The Huddleston Plan of Bidding" that was approved and sponsored by over three hundred New England contractors and sub-contractors at a Boston Building Congress meeting. This plan, modified in two important respects, was made a law in Massachusetts for public buildings. The Government pump priming era of W. P. A. and P. W. A. and finally the Second World War prevented any further attempt to renew the interest of architects and contractors in seeking some solution to this problem. Experience with "The Huddleston Plan of Bidding" over a period of fifteen years has convinced me it definitely improves the contractual relations of all parties to a building contract and increases very markedly the confidence of the client in his architect and contractor.

Keyser Company Awarded two School Contracts

Construction of a new \$250,000 athletic building at Tilton School, Tilton will begin early in April, trustees of the school announced recently. Leon Keyser Company, Manchester, was low bidder and has been awarded the contract.

The Keyser Company has also been awarded the contract for the new Maple Street Grade School at Claremont.

First Miss: "What's the idea of all the ladies at church today?"

Second Miss: "There's a shovel-runner down there making public confession of his sins."

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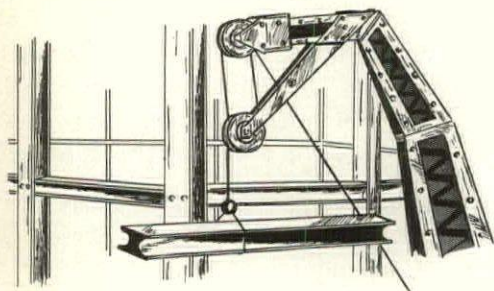
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N. H. Engineers Meet

New Hampshire engineers from all parts of the state, numbering more than 100, met at a quarterly meeting of the New Hampshire Society of Engineers at the Carpenter Hotel in Manchester last month. President John Durgin of Portsmouth presided over the meeting.

Charles B. Molineaux, Vice-President of the New York Society of Professional Engineers, was guest speaker, talking on the engineering profession, and outlining the activities of the New York Society.

Construction and engineering movies were shown. The next meeting of the New Hampshire Society of Engineers will be held at the Conia in May.

Building on Up-Grade

Contracts awarded for building and engineering works in New Hampshire in January totaled \$1,269,000 to show increases of 94 per cent over December and 5 per cent over January of last year, it was reported by James A. Harding, district manager of F. W. Dodge Corporation.

Residential awards, amounting to \$579,000, were up 185 per cent over December and 100 per cent over January a year ago.

Nonresidential awards totaled \$429,000. The total was up 10 per cent over December and down 56 per cent from January of last year.

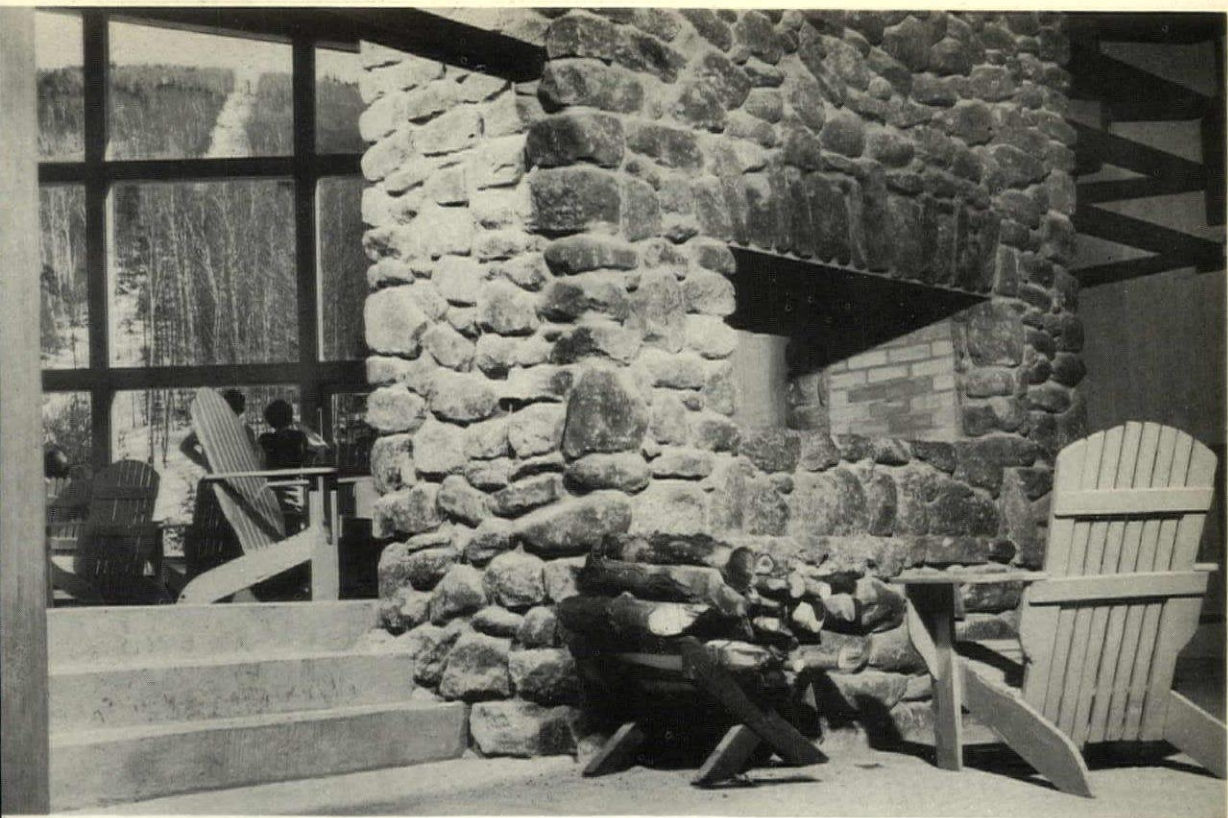
Heavy engineering awards were up substantially as compared with December. In January, 1949, the total of \$261,000 showed gains of 321 per cent and 125 per cent over the respective months of comparison.

Completes Paint Course

J. E. Flint, manager of Manchester Warehouse, Pittsburgh Plate, announces that George Fournier, territory representative for central New Hampshire, has just completed a two weeks paint course in the Springfield, Pennsylvania factory of Pittsburgh Plate Glass Company.

Visitor: "Doctor, what can you say to a beautiful girl who is so scary she jumps into the nearest man's arms when she's frightened?"

Doctor: "Bool!"



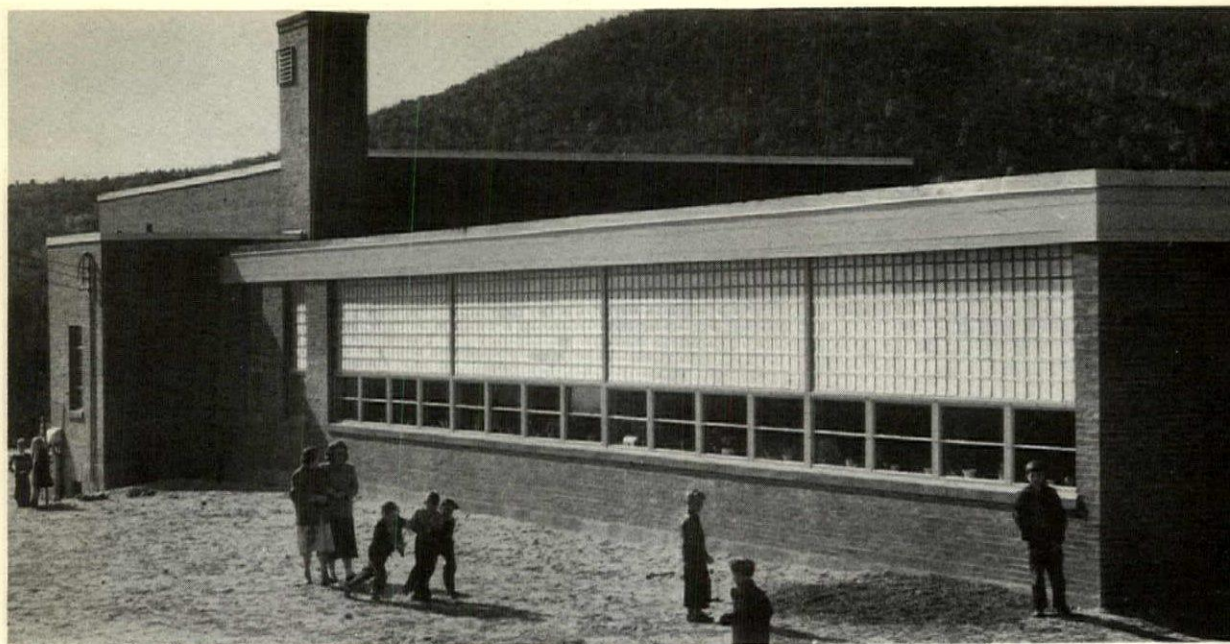
Two-way fireplace between Lounge and Dining Areas, Sunapee Ski Lodge. Koehler and Isaac, Architects.



General view of Lodge and Chair Lift Tow at Mt. Sunapee Recreation Area.



Triangular window overlooking ski tow and slopes, Sunapee Ski Lodge, Koehler and Isaac, Architects.

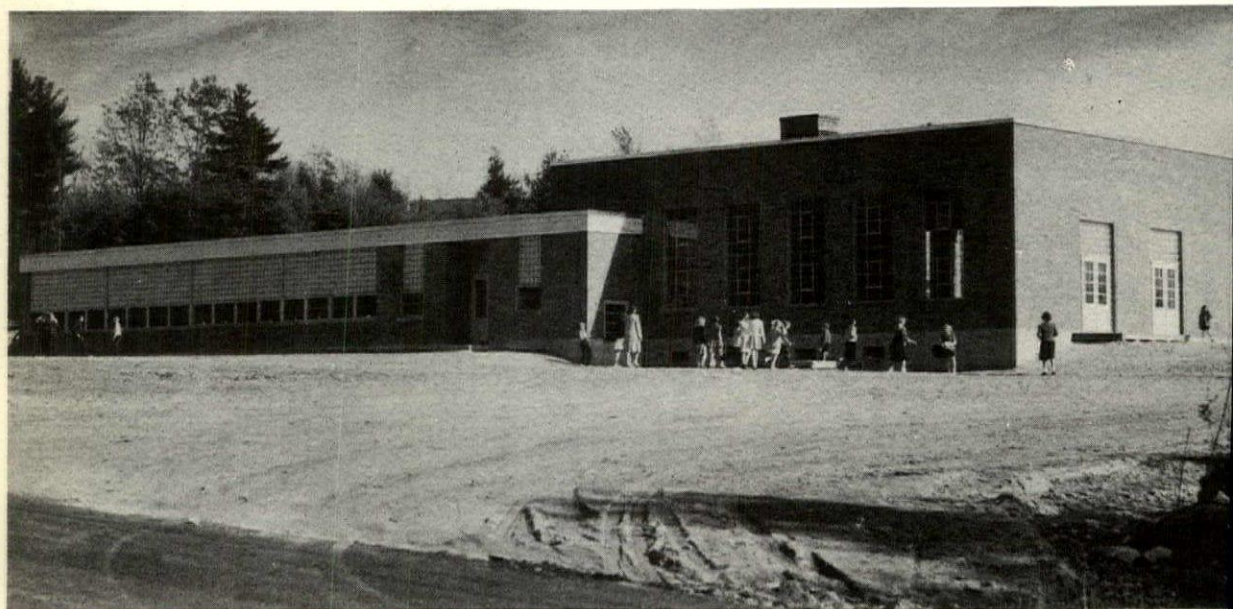


Classrooms with good ventilation and natural light are provided by extensive use of glass and glass blocks.

Moultonboro Grade School Completed at Cost of \$90,000

Moultonboro, N. H., Consolidated Grade School was built in 1945 at an approximate construction cost of \$90,000 from plans by Irving W. Hersey Associates, Architects, Durham, N. H. The building contains 117,380 cubic feet or 11,610 square feet divided into four classrooms, teachers' room, boys' and girls' toilet rooms, kitchen, and an activities room 42'-6" x 60'-0", with a basement.

Walls are of face brick backed up with cinder block painted. Floors in classroom areas are mastic tile on concrete slab. Floor of activities room is hardwood laid on wood joists. Windows in classrooms are ventilating clear glass to a height of six feet topped out to ceiling with directional glass block. Heating is by a forced circulation of hot water system.



Exterior View of Moultonboro Consolidated Grade School.

ARCHITEXTOPICS

(Continued from page 4)

Well, we have had such good and interesting at the Chapter meetings lately, and the mover boys were all so cordial, I was really believing that architects are, after all, quite human, even when juxtaposed to their brothers competitors. Then it comes time for material to be in for the next issue of the N. H. Architect, and I begin to have doubts again; when it comes time for exhibits to be in for the Chapter-sponsored traveling exhibition, and 9 of the 14 promissors come through. So I guess we're only 9/14 human, or only 4 of us are human beings—the rest of us are just architect!

March, the month of the Annual Scramble, at hand. Almost every architect has a stake in some Town or School District Meeting. Is there a selectman or School Board member who does not read the codes of ethics for architects and contractors, published in the December, 1939 issue? Has every architect read them, too? These ethics were promulgated for the best interests of—guess who? The architect, incidentally, the Owner in particular, and architecture in general. Let's not let ourselves down!

President Witmer has appointed a committee consisting of Gene Magenau, Steve Tracy and Arthur Hudson to meet with similar committees from Vermont and Maine to restudy the schedule of fees as published in the New England "Blue Book."

William W. Freeman, of the Vermont Chapter, is the instigator. It is time that such a study should be made as we have had three years of experience since publication of the Blue Book. Although we know that some of the metropolitan architects farther South consider the schedule of fees too low, there is some feeling that it is too high for the three northern states, where salaries and overhead may be at a lower level.

The committee will attempt to learn to what extent the Blue Book has been used and followed. Comment from architects, and other readers as well, will be gratefully received.

Mr. Keith Doms, Librarian of the Concord Public Library, states that about 300 persons are viewing the Architects' Exhibit which is having its first showing there. Almost everyone who comes in pauses to look over the various mounts. Miss Farrar, the Reference

Librarian, estimates that the comments favorable to the "modern" designs are just about as numerous as those expressing preference for the traditional ones.

Mr. Doms is showing displays of book jackets, and is putting out books on architectural subjects to coordinate with the Exhibit. With such splendid cooperation and so much interest on the part of the public, it is unfortunate that only 65% of the mounts promised for the exhibit were submitted by the architects.

Better Homes Show This Month

Arrangements for the Manchester Better Homes Show, to be held March 27 to April 1, have been completed. The show will be held at the Sweeney Post hall, Manchester. Manchester contractors and building material dealers participating in the show will exhibit their work and the latest in building materials and home appliances.

The exhibition is to be sponsored by the Manchester Chamber of Commerce, under the guidance of a local committee of contractors and merchants.



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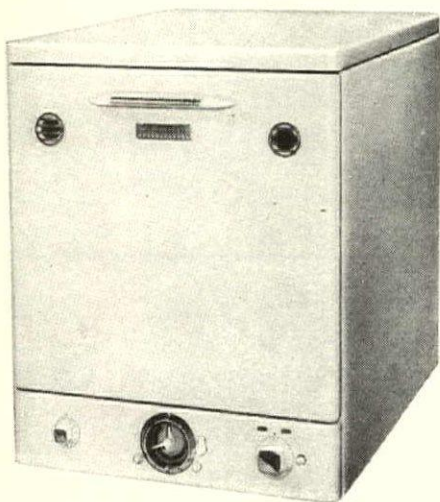
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New Universal "Select-a-Range" Unveiled in Manchester

Architects John Holbrook, Norman Leggett, Roland Simonds, Gene Magenau and engineer Clyde Loiselle were among those attending the "unveiling" of a new line of Universal electric ranges manufactured by Landers, Frary & Clark of New Britain, Conn. Mr. Paul Dorn, Manager of Graybar, Inc., for Maine, New Hampshire and Vermont was host for the occasion, and a very genial and generous host he was. After the cocktail hour and dinner at the Manchester Country Club, both the conventional and the new Universal range models were

shown and described in detail by several of sales personnel.

Outstanding feature of the new range is called "Select-a-Range" is its unit construction of three basic parts: the oven, platform surface cooking unit, and storage drawer. They can be assembled in any combination, or at separate locations, giving the designer complete freedom and flexibility, and making food preparation tasks easier and more comfortable for the housewife.



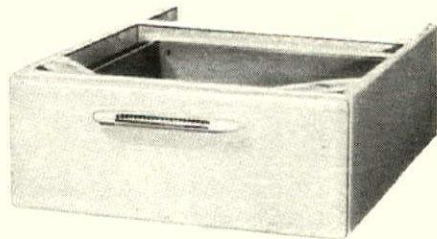
COMPLETE OVEN — with one-piece porcelain enamel-lined interior, Thermostat Control and Pre-Heat Push Button. Automatic Timer and Minute Minder are standard equipment but can be eliminated if desired.



PLATFORM SURFACE UNIT — with four fast-heating "Monotube" Thrift Units, Seven-Heat Control Switches. Platform backsplash and platform light are optional.

More than 25 different arrangements can be created from these three basic modular units. Each unit is complete in itself so that it can be installed separately . . . recessed in stock cabinets or custom millwork. Or these units can be fitted together . . . with a right-hand oven, left-hand oven, double ovens . . . all at the "Convenience-Level" height to eliminate back-breaking stooping and bending.

STORAGE DRAWER — extra-heavy gauge steel, high-baked enamel inside and out, brass runners.



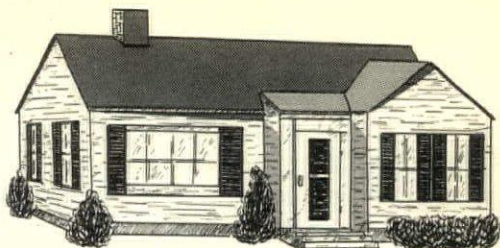
N. H. Architects View Manchester Bank Model

Twenty-nine members and guests were present for the quarterly meeting of the New Hampshire Chapter, American Institute of Architects, held at The Carpenter Hotel, Manchester, February 16.

Colored slides of the Jordan Marsh Store project in Boston were shown, and the work was discussed by Robert Dean and George Lloyd of the firm of Perry, Shaw and Hepburn.

Theodore Postma of Hopkinton displayed a scale model of the proposed Manchester Savings Bank building. Carl Peterson of Manchester is the architect. It was also announced that an exhibit would be held at the Concord Public Library during the month of March.

Maurice E. Witmer of Portsmouth, president, presided.



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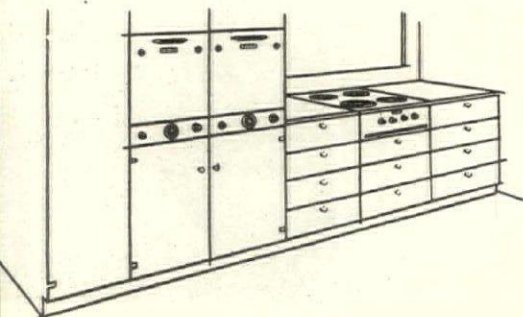
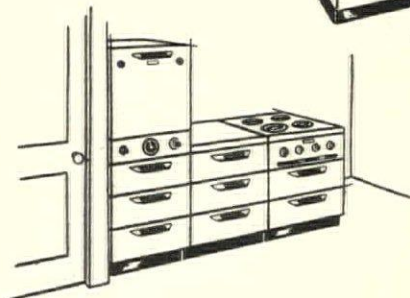
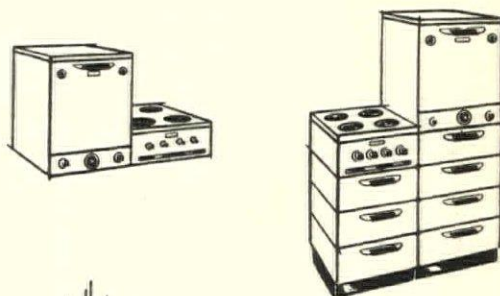
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Snow - Melting

From Information Compiled by A. M. Byers Co.

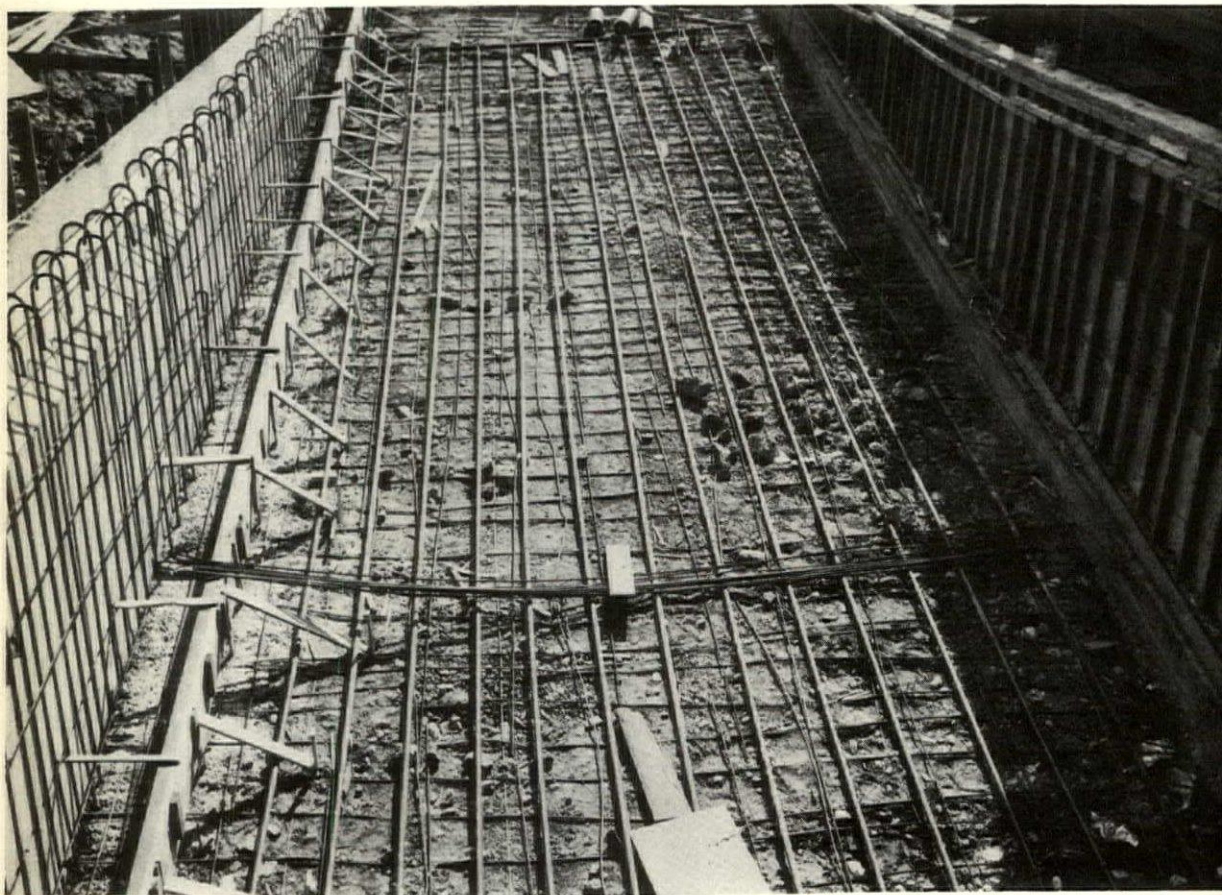
Years ago the idea of melting snow by the use of heating pipes was the subject of some of our popular comic strips featuring men who would rather toy with an idea than do any actual work. Today with the millions of dollars being spent annually for snow removal, there has been an increasing use of heating pipes embedded in or under the pavement for instant removal of the snow as it falls.

Keeping all types of surfaces clear of ice and snow is not only considered feasible today, but is relatively easy to accomplish. Many installations over the U. S. A. and Canada show it to be an efficient and economical method for the removal of these materials. These installations have been made in all types of road building materials and in a multitude of services, ranging from highways, driveways, sidewalks, stairs, loading platforms, dogruns, and other areas where a snow and ice free surface is desired.

Today, approximately 50 known snow melting systems using genuine wrought iron pipe are

ready for operation in the five northern England states alone. Several of these are among the largest installations in operation in the U. S. A. at this time. Areas involved include sidewalks, driveways, loading areas, for office buildings, banks, industrial plants, stores, schools, hospitals and private residences.

One of the first installations in New England was installed at Snake Hill Road, Belmont, Mass. This is a private road approximately 800 feet long with a 116 foot rise, involving "U" turn and several 90° turns. This system was installed by New England Radiant Heating Company, South Boston, Mass., using two inch genuine wrought iron pipes for each wheel track. Heat is supplied by an oil fired hot water boiler such as might be used in a large residence. One 3" circulator is used to circulate ethyleneglycol-water mixture through the pipes. This system serves twelve families who share the cost of the installation and it was placed in operation in 1947. The contractor reports that through the exceptionally heavy snow



Installation of 1 1/4 wrought iron grid in truck unloading ramp for Star Market, Newtonville, Mass.



Area snow melting system at Swearington Motors, Portland, Maine, using wrought iron pipe clears driveway. The banks piled high at the curb were shoved there by street snow plows.

1947-1948 approximately \$300.00 worth of fuel was required for its operation. The system is started and stopped by a manual remote control switch in one of the homes near the separate building housing the boiler.

Another installation was made at an auto agency filling station in Portland, Maine, designed by J. C. Saunder, Architect, Portland, Maine, which also employs radiant heating for the entire garage, office and showroom areas. This system also operated during the winter of 1947-1948 when Portland received approximately 80 inches of snowfall. The owners in this case estimated their operating costs at less than \$300.00 for keeping approximately 8,400 square feet of area snow and ice free during the winter.

Design

The amount of heat required for snow melting may be calculated by use of the following formula:

$$H = AtdF$$

where

H=BTU per hour (Btuh)

A=Area to be melted (sq. ft.)

t=Rate of melting (ft. per hour)

d=Density of snow (6 lbs. per cu. ft.)

F=latent heat of fusion of snow (or ice) (Btu. per lb)

The factor d is variable since the density of snow varies widely depending upon air temperatures at the time of the snowfall. The other factors are readily determined.

In the selection of a temperature suitable for d, the U. S. Weather Bureau data was consulted. Records indicated that 87.5% of snowfalls occur in a temperature range of 10° F to 35° F. The mean temperature in this range is 26° F. Thus to fix the density of snow at a constant average value, its density at 26° F was used as 6 lb. per cu. ft. Using this figure, a melting rate of 1" per hour, and a latent heat of fusion of 144 Btu per pound, the amount of heat required per square foot of area for only the melting job becomes

$$H = 1 \times 1/12 \times 6 \times 144 = 72 \text{ Btuh} \\ (\text{per sq. ft.})$$

Past experience suggests an efficiency of approximately 70% for such systems, giving approximately 100 Btuh per square foot required. This allows for the downward and edgewise losses.

Most of the operating systems have been installed using this figure as a basis of design. Some designers in sizing the boilers or other heating units prefer to allow additional safety factors for speedy pick-up, and areas where

(Continued on page 14)



Installation of 1" wrought iron pipe for snow melting on Snake Hill, Belmont, Mass.

(Continued from page 13)

exceptional air currents or other conditions may impose greater demands on the system. Other designers introduce additional safety factors to allow for the change in viscosity and specific gravity of the heating liquid, due to the addition of ethyleneglycol. This has little, if any, effect on the heat transfer rate in the piping system panels, since the limiting factors that determine the overall heat transfer are outside the pipe, but it may affect the heat transfer coefficients within the heat exchanger or boiler used. It is suggested that the manufacturer of the heating equipment be consulted to assure proper performance of his equipment.

Pipe Spacing

Many of the installations made in the past used 1 $\frac{1}{4}$ " pipe on 18" centers or 1" pipe on 15" centers. The selection of this spacing was considered economical, even though such spacing obviously causes melting to occur first immediately above the piping. The lag in the areas between the pipe runs has never been reported great enough to be seriously objectionable. These spacings however, should be considered a maximum and where more uniform results are desired closer spacing should be used.

Water temperatures usually range around 160° F. The temperature drop through system varies from 10 to 30° F, depending upon area involved and permissible pumping head. Usually in design 20° F is the maximum allowable drop.

The use of steam is often discussed and has been used in some industrial applications. It is not considered good practice in most cases for a number of reasons. Except where a continuous flow of steam is available, there is a danger of condensate freezing at the start of a melting operation.

The question of sudden and uneven expansion in any intermittently operated system looms of major importance.

Most installations use a separate boiler and heat exchanger to provide hot water for the snow melting system. In some cases the water from the same boiler that is employed for space heating is used. Usually however that idea is abandoned due to the inadequacy of the boiler or the additional problems involved in anti-freezing the entire heating system as well as the snow melting system.

Installation

Many questions are asked regarding the location of the piping with respect to the surf-

the area to be cleared.

Faster action may be obtained by having the piping very near the surface, however such practice increases the probability of concrete fracture and pipe damage due to heavy loading. In order to completely avoid any consideration of expansion other designers elect to place the piping beneath the slab. It has been found by observation this procedure reduces both the clearing action and efficiency of the system.

Installation records indicate that the majority of systems have the piping placed on top of a prepared fill or base over which concrete or asphalt is poured. This normally results in approximately 75% embedment of the pipe. In both systems both intermittent hot water and continuous steam have operated without visible detriment to concrete, asphalt or the wrought iron pipe used.

In some cases where heavy slab sections are necessary to handle the loads anticipated the designer will elect to place the pipe within the slab. Concrete authorities have suggested that 12" be considered as a minimum cover over the pipes in these cases. Stools or supports used to raise the pipe from the base should be made of similar material to the piping. It may be that sufficient short pieces of pipe resulting from fabrication will be available.

When construction is to proceed during the winter, care should be taken to see that excessive amounts of calcium chloride sometimes used to prevent freezing of concrete are not used. Calcium chloride in amounts necessary to prevent freezing is detrimental to all ferrous materials while the amount used for hardening in some cases would have little if any effect.

Additional points concerning installation include, fabrication by welding to provide the most durable joint, avoiding cinders or sulphur containing materials for fill, and provision for full expansion joints in the concrete by using slotted expansion loops.

Operation

The decision of whether to operate continuously or intermittently is usually a major consideration in the design of the system.

When steam is used it is the consensus of opinion that continuous operation is necessary to prevent freezing of the condensate and the dangers of expansion. However, this introduces the question of operation costs and this can only be justified from a cost standpoint if waste

or exhaust steam is available.

Continuous operation of hot water systems is sometimes employed where the need for a snow and ice free surface outweighs the additional cost of operation. This is sometimes done by the use of one or more temperature bulbs placed in the slab to maintain the slab just above freezing at all times.

The greater majority of the systems use manual controls with the owners depending upon weather reports to start the systems in advance of the expected storm. Some few have installed various types of mechanical or electronic devices which will start their systems in case of any snow fall.

Anti-Freeze Compounds

While there are a number of chemicals which can be added to water to lower the freezing point of the mixture the type usually used is of the ethyleneglycol base type. It should be pointed out that this type of product is toxic and therefore no permanent connection should be made between the snow melting system and portable water system.

In regard to other materials which might be chosen, flammability, fumes, and corrosive properties should be carefully considered before using any of these.

A method of filling the systems of course must be provided. Usually the quantity of anti-freeze to be used is added and the system finally filled with water. Care is taken in filling the system to avoid trapping air in it introducing operating difficulties.



THE RESULTS—After snowfall winter of 1947-1948 shows snow and ice free tire tracks on Snake Hill Road, Belmont, Mass.

In the February issue of the New Hampshire Architect these two pictures were placed over the wrong articles. As the printers of the magazine we wish to offer our humble apologies and rectify our mistake.



Hall's Camera Supply Shop, Newport, N. H.

Interior Shot of Wheeler Gym

The above picture shows the Wheeler Gymnasium at Newport, New Hampshire. Lyford and Magenau of Concord, New Hampshire, were the architects and Donald D. Snyder and Son, Incorporated, of Gardner, Massachusetts, were the general contractors.



Granite State Studio, Keene,

Wells Memorial School, Harrisville (Chesham) N

The above picture shows the Wells Memorial School, Harrisville (Chesham), New Hampshire. Norman P. Randlett of Laconia, New Hampshire, was the architect and the MacLin Company, Incorporated, of Keene was the Contractor.

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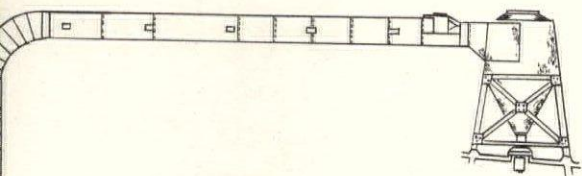
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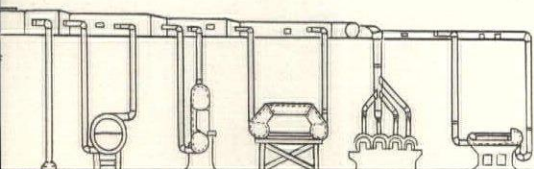
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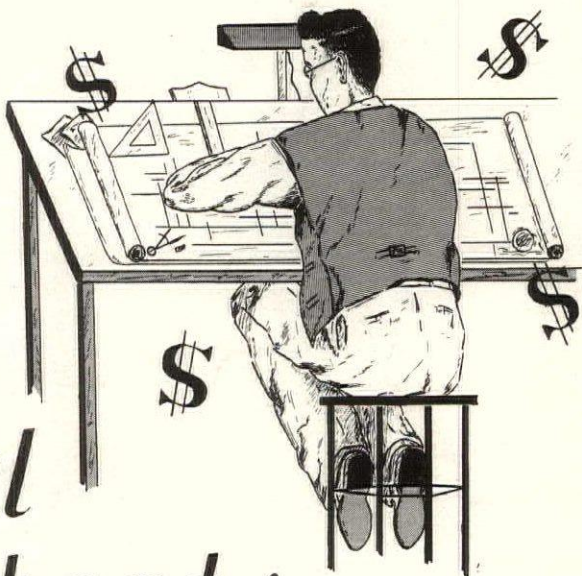
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